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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,811	09/10/2003	Yasuo Matsumura	117092	2869

25944 7590 09/18/2006

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
RODEE, CHRISTOPHER D	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 09/18/2006

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/658,811
Filing Date: September 10, 2003
Appellant(s): MATSUMURA ET AL.

Julie Lake
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 18 August 2006 appealing from the Office action mailed 1 December 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed. A request for consideration was filed 1 March 2006.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US Patent/Pub	Inventor(s)	Date
4504563	Tanaka et al.	3-1985
2003/0077534	Shiraishi et al.	4-2003
2297691	Carlson	10-1942
6214510	Kojima et al.	4-2001

Other Reference

Diamond, Arthur S & David Weiss (eds.) Handbook of Imaging Materials. New York: Marcel-Dekker, Inc. (11/2001)pp. 155-164, 173-187,209, 210, and 217-220.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5, 13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka *et al.* in US Patent 4,504,563.

Tanaka discloses a toner having a vinyl copolymer binder with a specific acid value and a colorant. As seen in patent claim 11, the binder is a methyl methacrylate/iso-butyl methacrylate/methacrylic acid copolymer. As seen on specification pages 19 and 20, methyl methacrylate is a high Tg monomer (p. 19, l. 15-16), butyl methacrylate is a low Tg monomer (p. 19, l. 22), and methacrylic acid is a hydrophilic monomer (p. 20, l. 6), each according to the respective structural formulae. The weight average molecular weight of the polymer is 50,000 to 500,000 (col. 3, l. 31-54). The toner also contains a dye or pigment as a colorant (col. 4, l. 45-54). The toner has a size of about 10 to 20 μm (col. 4, l. 64-65) and the binder resin and the

colorant can be spray dried to give a fine powder, followed by mixing with carrier particles to form a two component developer (col. 4, l. 65 – col. 5, l. 2). Because the toner powder is formed by spray drying it appears that it would have the same characteristics (e.g., shape) as present in the product-by-process limitation of pending claim 3. The Toner Preparation examples show 100 parts by weight of the binder resin and 11 parts by weight of a carbon black colorants are used.

Claims 11, 12, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka *et al.* in US Patent 4,504,563 in view of Diamond, Arthur S & David Weiss (eds.) *Handbook of Imaging Materials*. New York: Marcel-Dekker, Inc. (11/2001) pp. 155-164, 173-187, 209, 210, and 217-220.

Tanaka was discussed above and those remarks are incorporated here. Tanaka does not appear to disclose the claimed average particle diameter of claim 11, the particle size distribution of claim 12, the release agent of claim 14, or the carrier size of claim 17. Tanaka does teach that the toner has a size of about 10 to 20 μm, as noted above

Diamond teaches on page 159 that the typical size of toner particles is 6 to 7 μm. Diamond also teaches that release agents, such as polyethylene or polypropylene wax, are typically added to toner formulations to improve offset resistance during the fixing process. Diamond further discloses that the particle size distribution should be minimized to prevent toner scattering giving "dirt" and copy quality problems (p. 187) and that the average size used is typically from 7 to 12 um. Diamond states that the toner size distribution should be minimized to give better copy quality. Note the common concern in the specification at the bottom of page 27. Diamond also discloses the typical carrier particle size as being from 3 to 50 times that of

the toner particle average size (p. 210). Specifically disclosed carrier particle sizes are 100 μm and 130 μm for iron and 10 to 120 μm for spherical ferrites (p. 219).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a releasing agent to the toner of Tanaka because this reduces the amount of toner offset during fixing, which is specific concern in Matsunaga (col. 1, l. 15-19). The artisan seeking to improve offset resistance in Tanaka would look to additional references in the art to further improve this feature. The artisan would also have found it obvious to produce the toner with a size of about 6 to 7 μm with a narrow particle size distribution because Diamond teaches that smaller sized toner particles are currently used to improve line resolution and a narrow particle size distribution aid copy quality through use. The claimed GSDv value is seen as an optimization of the particle size distribution because this numeric value would approach 1 as the size distribution is minimized. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose a size for the carrier particle in Tanaka's two-component developer that is within those sizes conventionally used in the art and within the general guidance of 3 to 50 times that of the toner particles in order to form an effective two-component developer.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka *et al.* in US Patent 4,504,563 in view of Diamond, Arthur S & David Weiss (eds.) *Handbook of Imaging Materials*. New York: Marcel-Dekker, Inc. (11/2001) pp. 155-164, 173-187, 209, 210, and 217-220 as applied to claims 11, 12, 14 and 17 above, and further in view of Shiraishi *et al.* in US Patent Application Publication 2003/0077534.

Tanaka and Diamond were discussed above. Diamond also teaches that charge control agents are typically used in toners to give the proper level of charge to the toner (pp. 180-181). However, a compound with a carboxyl group as the charge control agent is not disclosed.

Shiraishi discloses a charge control agent having a carboxyl group in the formula (1), particularly when R is hydrogen.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Shirashi's charge control agent in the toner of Tanaka because Diamond teaches that charge control agents are conventional in the art and Shiraishi discloses a specific charge control agent that is moisture resistant and inexpensive (¶ [0019], [0020]), among other features, while giving good triboelectric charging characteristics.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka *et al.* in US Patent 4,504,563 in view of Carlson in US Patent 2,297,691.

Tanaka was discussed above and those remarks are incorporated here. Tanaka does not appear to disclose the claimed shape factor and surface index of claim 9. However, Carlson teaches that spherical toner particles are advantageous because this shape gives a more accurate distribution of the powder when developing a latent image (p. 3, left column, bottom, to right column, top).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the toner of the Tanaka with a generally spherical shape because this shape gives a more accurate distribution of the powder when developing a latent image. The claimed SF-1 values appear to relate the sphericity of the toner and values closer to 100 give a more spherical shape (spec. p. 25; Example 2, p. 51; Example 4, p. 54). Thus the

teaching in Carlson of a generally spherical shape implicitly teaches the artisan to obtain an SF-1 value near 100.

Claims 9, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka *et al.* in US Patent 4,504,563 in view of Carlson in US Patent 2,297,691 as applied to claim 9 above, and further in view of Kojima *et al.* in US Patent 6,214,510.

Tanaka and Carlson were discussed above and those remarks are incorporated here. Tanaka does not appear to disclose the surface property index of the instant claims, but Kojima teaches that a toner having a surface property index of 2.0 or less gives improved transfer properties (col. 7, l. 4-32). Kojima also teaches that a SF1 value near 100 correlates to a spherical shaped toner as discussed above (col. 5, l. 11-50) and that a generally spherical shaped toner is advantageous. Further Kojima teaches that the colorant particle size in a toner should be from 10 nm to 1 μm in order to avoid toner scattering (col. 10, l. 13-24). A colorant size of 250 nm is exemplified in Example 1 (col. 24, l. 5-6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to produce the toner of Tanaka with a surface property index of 2.0 or less and a SF1 value near 100 because Carlson teaches that generally spherical toner ives a more accurate distribution of the powder when developing a latent image while Kojima teaches surface property index of 2.0 or less gives improved transfer properties. The artisan would also have found it obvious to optimize the size of the colorant in Tanaka because Kojima teaches that specifically sized colorant reduces toner scattering and liberation of colorant particles from the toner.

(10) Response to Argument

Appellants traverse the section 102 rejection because "Tanaka does not teach, in discrete embodiments, a toner that includes a binder resin as a main component in which the binder resin includes a high Tg monomer of claimed structural formula (1), a low Tg monomer of claimed structural formula (2) and a hydrophilic monomer of claimed structural formula (3)" (Brief p. 10). Appellants then analyze Tanaka noting the various monomers disclosed as effective to form the binder resin in columns 2 and 3. Appellants state, "The Examiner takes the position that Tanaka teaches a toner including a binder resin that is a copolymer of a high Tg monomer, a low Tg monomer and a hydrophilic monomer. See Tanaka, col. 2, line 43 - col. 3, line 6." Appellants also note the Examiner's reliance on patent claim 11 (Brief p. 11).

The Examiner has carefully reconsidered his position with respect to Tanaka's teachings and has reviewed the prosecution record. Initially, the Examiner must note that he never specifically referenced the passage cited by Appellants spanning columns 2 and 3. The general disclosure and teachings were not relied upon for disclosure of the binder resin because the patent specifically discloses in claim 11 a toner having as a main component a binder resin consisting of methyl methacrylate/iso-butyl methacrylate/methacrylic acid copolymer. As noted above in the rejection, the instant specification discloses each of these components as meeting one of the requirements of the claimed copolymer binder resin. The fact that the reference discloses other possible monomer combinations for its binder copolymer is agreed. However, Tanka not only discloses but specifically claims a toner having a binder resin comprising a high Tg monomer, a low Tg monomer and a hydrophilic monomer where each monomer, respectively, meets the requirements of the formulae (1), (2), and (3). This specific disclosure of a toner having the binder resin of patent claim 11 as a main component is sufficient to anticipate the instant claims. Appellants assert, "Tanaka does not provide any teachings that would lead

one of ordinary skill to select, specifically, a high Tg monomer of claimed structural formula (1), a low Tg monomer of claimed structural formula (2) and a hydrophilic monomer of claimed structural formula (3) to form the binder resin of its toners." This position is not accurate because the patent specifically claims a toner with a copolymer having each of the monomer constituents required of the instant claims. Tanaka does not specifically state that the monomers disclosed in patent claim 11 are a high Tg monomer of claimed structural formula (1), a low Tg monomer of claimed structural formula (2) and a hydrophilic monomer of claimed structural formula (3). However, the reference discloses a single polymer binder having monomers that meet each of these monomeric requirements.

On Brief page 12 Appellants state, "Tanaka does not provide any examples relating to toner prepared using such a copolymer, nor does Tanaka indicate that these monomers are chosen so that high Tg monomer, a low Tg monomer and a hydrophilic monomer are included in the copolymer." Appellants are correct that the examples do not use the copolymer according to the instant claims or according to Tanaka's claim 11. However, the reference specifically discloses such a polymer and, during the term of the patent, Tanaka held an enforceable right for a copolymer within the scope of appealed claims 1-5, 13, and 16.

Appellants take the position, "Tanaka only discloses toners that include styrenic monomers; that is, all of the toners of the Tanaka examples include styrene monomers." Appellants are correct that all the examples produce a polymer with styrene as one of the monomers. However, the disclosure of the patent is not limited to the examples. The entire disclosure of the patent must be taken at face value for all it teaches. Tanaka specifically discloses a toner with a copolymer that does not contain styrene as a monomeric component in claim 11, and, as stated repeatedly above, the toner containing this copolymer meets the requirements of the toner of the appealed claims.

Appellants remarks on Brief pages 12 and 13 further stress the benefits of the claimed invention and that Tanaka does not anticipate the instant claims because of the various choices of monomers present for the toner binder resin. Although the reference does teach various possible monomers for the toner binder resin, Tanaka specifically discloses a toner with a binder resin meeting the requirements of the instant claims in patent claim 11. The benefits discovered by Appellant are not material to a section 102 consideration because the same material claimed by Appellant is identically disclosed by the applied Tanaka reference. If the same material is present in the claims and the prior art it must have the same properties. The reference does disclose combining the separate components in the form of a copolymer according to the claimed invention (see Brief p. 13) in patent claim 11.

The rejection is seen as proper for the reasons given herein.

With respect to the section 103 rejections, Appellants traversal for each of these rejections is that the primary Tanaka reference does not disclose the claimed toner where the binder resin copolymer is formed from a high Tg monomer of claimed structural formula (1), a low Tg monomer of claimed structural formula (2) and a hydrophilic monomer of claimed structural formula (3). Appellants further traverse the section 103 rejections because the supporting references do not make up for the alleged deficiencies in Tanaka. See Brief pages 15-24.

As discussed in detail above, the primary Tanaka reference fully discloses a toner having a binder resin within the scope of the claims. It is not necessary for the supporting references to disclose the claimed binder resin because the primary reference identically discloses this feature. The Examiner, in applying the section 103 rejections, never relied on the supporting references for the motivation to arrive at the claimed toner binder resin. There is no

need to look to these secondary references for the binder resin or for motivation to produce a toner with the claimed binder resin because the primary Tanaka reference fully discloses the toner binder resin. Consequently, when Appellants argue that the supporting references are directed to other types of binder resins than those claimed (e.g., Shiraishi: see Brief pp. 17 & 18), the argument is without merit because the primary reference fully discloses this resin.

The Examiner relies upon the supporting art to show various features of the respective dependent claims and discusses motivation to modify Tanaka's toners to incorporate these features. Appellants are not understood to traverse this aspect of the rejection, only that the art cumulatively does not disclose the claimed toner's binder resin. As fully discussed above, the primary reference fully discloses this binder resin in a toner.

The section 103 rejection is still seen as proper.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

CHRISTOPHER RODEE
PRIMARY EXAMINER

Conferees:

Mark Huff

Jennifer Kolb-Michener